

# A NEW CRAB FAMILY FROM SHALLOW WATERS OF THE WEST INDIES (CRUSTACEA: DECAPODA: BRACHYURA)

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*Abstract.*—*Mimilambrus wileyi*, new genus and new species is described from nearshore waters of Man-of-War Bay, Tobago, West Indies. *Mimilambrus* represents a new family that combines characters of the Parthenopidae, Leucosiidae and Calappidae. Its placement, therefore, lies between the Oxystomata and Brachygnatha, probably within the Oxyrhyncha.

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## Introduction

In April, 1978, participants from the University of Maryland Chesapeake Biological Laboratory conducted a two-week fisheries survey in near-shore and freshwater habitats of Tobago, West Indies, collecting fishes and invertebrates. Members of this party were J. D. Hardy, Jr., leader, L. Lubbers III, F. D. Martin, D. Shelton, and M. L. Wiley; the latter asked me beforehand whether decapod crustaceans would be of interest and was primarily responsible for both collecting and transmitting decapods to me after the expedition was completed. Among these specimens, the only brachyurans were two adults of the extraordinary species described below and named in honor of Dr. Wiley. A third specimen was later transferred from the North Carolina State Museum of Natural History, Raleigh.

I am grateful to all members of the University of Maryland party whose efforts made this report possible, especially Dr. Wiley who preserved the specimens for study and Mr. Hardy who initiated the survey, as well as to Mr. H. E. Wood, senior Fisheries Officer, Ministry of Agriculture, Lands and Fisheries, Fisheries Division, Port-of-Spain, Trinidad and Tobago, who was responsible for giving permission to make collections. The manuscript was critically reviewed by F. A. Chace, Jr., D. M. Cohen, B. B. Collette, B. Kensley, R. B. Manning, and M. L. Wiley. María Dieguez prepared the illustrations. J. E. Cooper provided the paratype male.

## Mimilambridae, new family

Chelipeds much longer and heavier than other legs; last legs normal in position. Carapace subcircular, barely concealing bases of legs; pointed rostrum present. Mouth field truncate triangular; external maxillipeds more or less covering buccal cavern, exognath hidden beneath endognath, palp of

endognath exposed; afferent openings lateral to external maxillipeds and anterior to bases of chelipeds. Antennules folding somewhat obliquely. Antennae small, peduncles in orbital hiatus. Male openings coxal, female openings sternal.

The family contains the following genus.

*Mimilambrus*, new genus

Carapace subcircular, regions fairly well delineated; numerous forward-trending spines and tubercles tending to arrangement in rows; spined anterolateral margin ending in strong, suberect, forward-trending lateral spine. Front with small but prominent, depressed rostrum flanked by notches for antennules. Orbits fairly large; eyes retractile, cornea well developed. Third maxilliped with subtriangular merus and broader polygonal ischium, both fringed laterally by dense long setae covering afferent branchial channels; merus with mesial edge grooved for reception of well developed palp, ventral edge of groove emarginate. Chelipeds slightly unequal, long, strong, merus and propodus prismatic in cross section, angles densely and strongly spined; fingers extended not diverging from axis of chela, occlusal surfaces with double row of variable teeth incompletely coalesced transversely. Male abdomen with segments 3–5 articulated but not completely mobile; mature female abdomen broad, segments free.

*Type-species*.—*Mimilambrus wileyi*, new species.

*Etymology*.—From the Latin, “mimus” an imitator, and “lambrus” referring to the old name introduced by W. E. Leach for crabs of the genus *Parthenope*. Leach gave no derivation for this name. Lambrus is the Latin name of the Lambro River in Lombardy, Italy; many crustacean genera were named for rivers (L. B. Holthuis, personal communication). It is also from Lambrusca, a corruption of Labrusca, a name for wild grapes (*Dictionnaire des Sciences Naturelle*, 1839).

*Mimilambrus wileyi*, new species

Figs. 1–5

*Description*.—Superficially parthenopid-like, with extremely spiny, tuberculate, granulate and punctate integument; hairs not hooked. Carapace depressed; surface uneven, regions fairly well marked and fairly eroded in irregular pattern more or less corresponding to depressions between raised regions; both eroded and raised areas granulate and punctate. Anterolateral margin with 2 small obtuse spines on subhepatic margin, posterior less than twice size of anterior, followed by spineless interval; 7 marginal spines on branchial margin, first small, second to fifth well formed (second to fourth forward trending), followed by reduced tuberculous sixth spine and line of granules ending in strong, erect, acute, forward-hooked spine at lateral angle



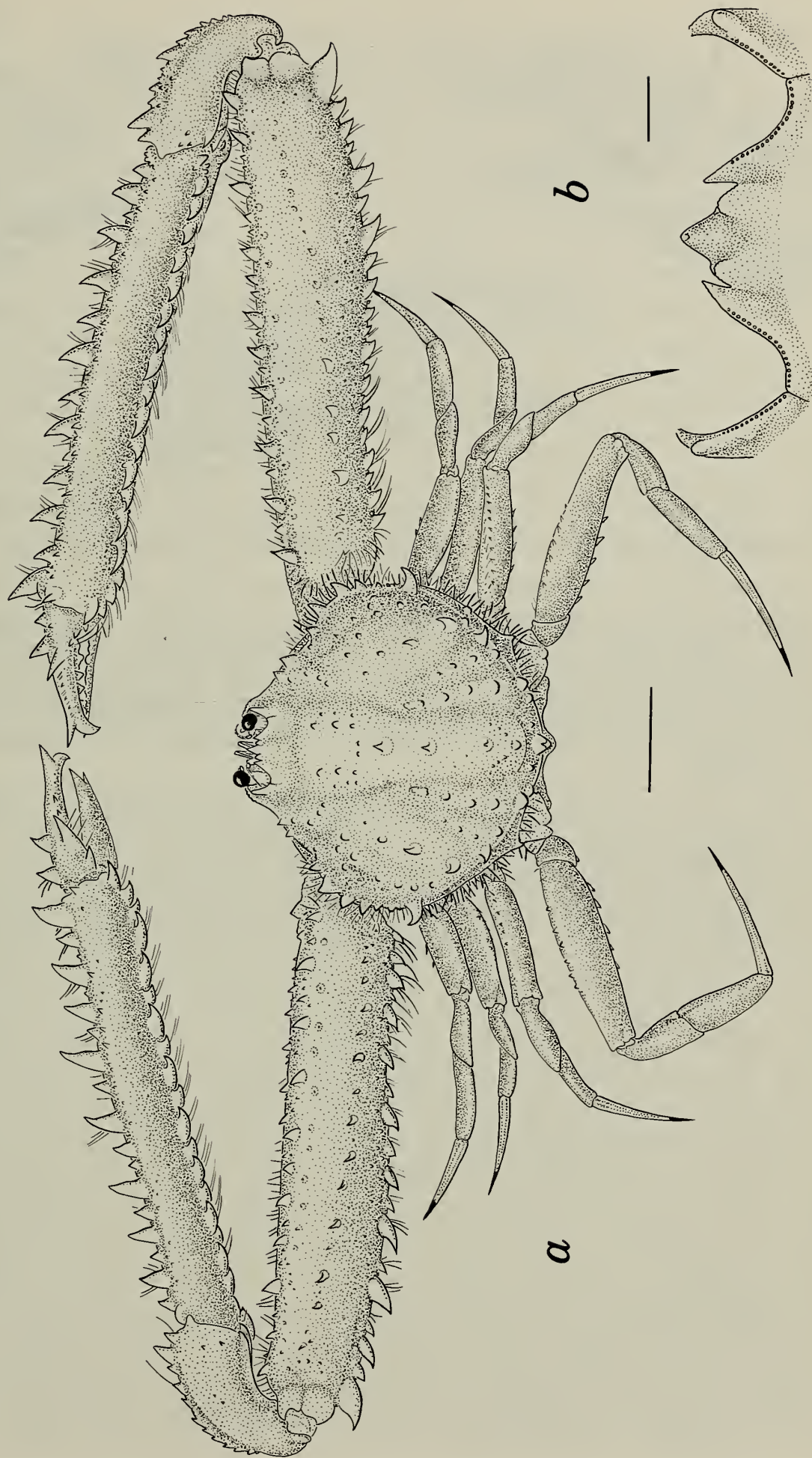


Fig. 1. *Mimilambrus wileyi*, male holotype; a, Dorsal view, 5 mm indicated; b, Frontal and orbital margins, 1 mm indicated.

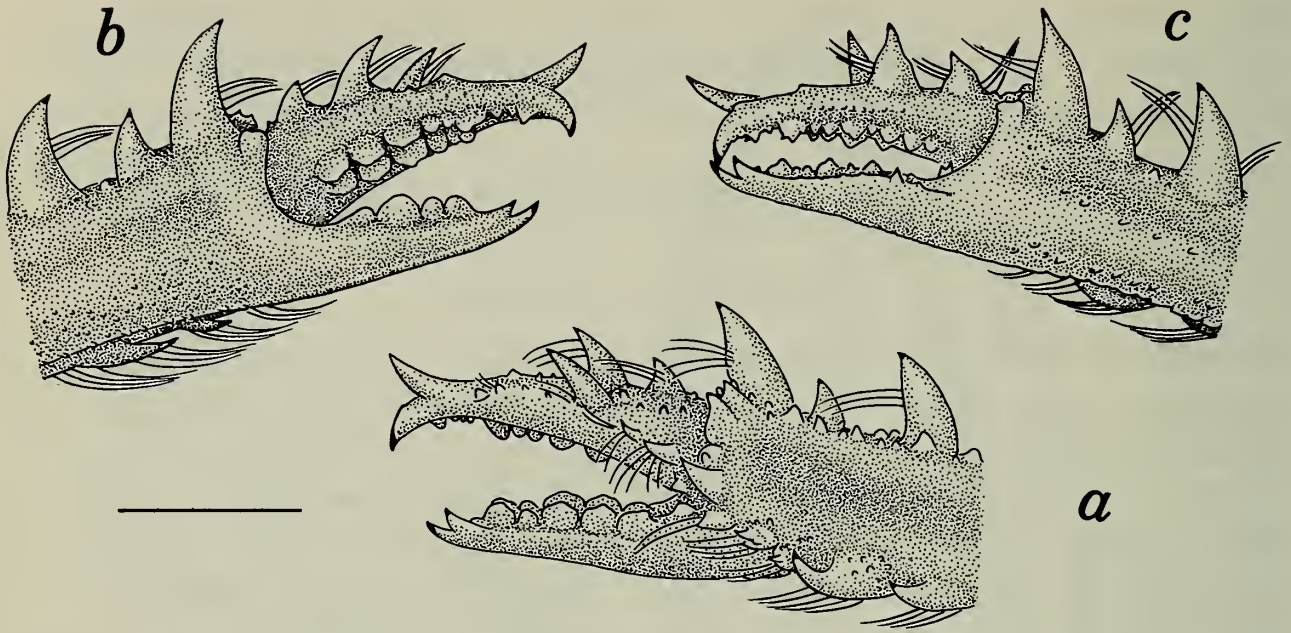


Fig. 2. *Mimilambrus wileyi*, fingers of chelipeds. Female allotype: a, Right, dorsomesial aspect; b, Right, ventrolateral aspect; c, Left, ventrolateral aspect; 5 mm indicated.

about twice as long as preceding spines. Strong, elongate, blunt subbranchial spine above first walking leg (p2). Posterolateral margin straight and granular above base of fourth leg but excavate and emarginate above base of fifth leg. Posterior margin arched ventrad, paralleled by submarginal row of tiny granules.

Carapace with median raised tract extending from gastric to posterior margin bearing 5 spines in midline; 1 strong mesogastric preceded by submedian pair of granular tubercles and these in turn preceded by 3 remote pairs of granular tubercles to either side of midline on proterogastric margin, posterior pair obsolescent; 1 strong urogastric; 2 weak cardiacs flanked by 3 small tubercles at each side; 1 strong, forward-hooked intestinal flanked by pair of tubercles to either side paralleling posterior margin. Branchial regions inflated, with concentrically arched rows of spines and tubercles directed anteromesially from posterolateral margin; 2 low mounds, one above other, at junction of posterior and posterolateral margins on low ridge confluent with cardiac region, lateral to them an arcuate groove; then an ill-defined raised tuberculate area paralleled laterally by row of 5 spines originating above base of fifth leg, last 2 spines acute and hooked forward, penultimate strongest, third spine obtuse or reduced and 2 preceding it reduced to granular tubercles; lateral to these a row of 4 rather small low spines originating near lateral spine, anteriormost reduced but fairly acute, second and third stronger with accessory granules on slopes, posteriormost low; intercalated between this row of spines and those of anterolateral margin a row of about 3–5 suppressed spines plus granules. Crescentic patch



of 3 or 4 granular hepatic tubercles above marginal subhepatic spines, anteriormost largest, patch confluent with raised orbital region.

Front narrow, cut into rostrum consisting of narrow, depressed but projecting triangular tip flanked basally by raised granulate knob at either side, a deep lateral notch, and prominent narrowly triangular inner orbital spine barely exceeding basal rostral knobs and depressed to same level as rostral tip; notch and raised basal knobs provide recesses for obliquely but almost vertically folding antennules. Deeply cut orbits slightly tubular, dorsal margin finely and evenly granulate, single dorsal suture; outer orbital tooth strong, equaling rostrum, flanked by lesser tubercle on upper and lower side, lower one largest; strong infraorbital tooth exceeding rostrum and in turn exceeded by antennal peduncle; latter not filling orbital hiatus. Eyes well developed, subcylindrical stalks of moderate length, retractile, black cornea scarcely dilated. Antennules and antennae short, of about equal length.

Mouth field truncate triangular; major articles of third maxillipeds not completely closing mouth field, rimmed by dense fringe of long setae most conspicuous along lateral margins; setae originating as well on sternite III, coxa and basis of chelipeds, and, together with similar setae on sharply defined milled edge of otherwise smooth subbranchial and pterygostomian regions, angling forward to base of infraorbital spine to form filter for hollowed afferent branchial channels mesial to milled edge. Marginal notch between pterygostomian and subbranchial regions.

Third maxillipeds with ischium and merus punctate and granulate ventrally; ischium roughly 4-sided, with shallow longitudinal depression; distal corners almost right-angled, proximal corners rounded; lateral margin nearly straight but oblique and also curved inward proximally; basal margin slightly concave, directed anteromesially; mesial margin nearly straight except angled in distal part for lodgment of dactyl, submarginal external line of uniform fine granules paralleled mesially by stiff submarginal setae overlying row of close-set, almost uniform marginal teeth, teeth and part of setae concealed along lodgment for dactyl; distal margin sinuous, width about 0.6 greatest width of entire article. Merus roughly triangular, reaching level of epistome, slightly longer than broad, ventral surface convex along axis except shallowly cupped mesially; lateral margin an almost uniform shallow arc; tip rather narrowly rounded; mesial margin split longitudinally; exposed irregular ventromesial part paralleled by submarginal row of nearly uniform close-set granules except where clumped behind jutting proximomesial angle; projecting dorsomesial part hidden by palp, margin entire. Distal 3 articles (palp) of limb smooth and iridescent on exposed surfaces, dense tract of partly concealed setae along mesiodorsal surface ending in long terminal tuft. Carpus transverse in repose, inserted near internal midlength of merus,

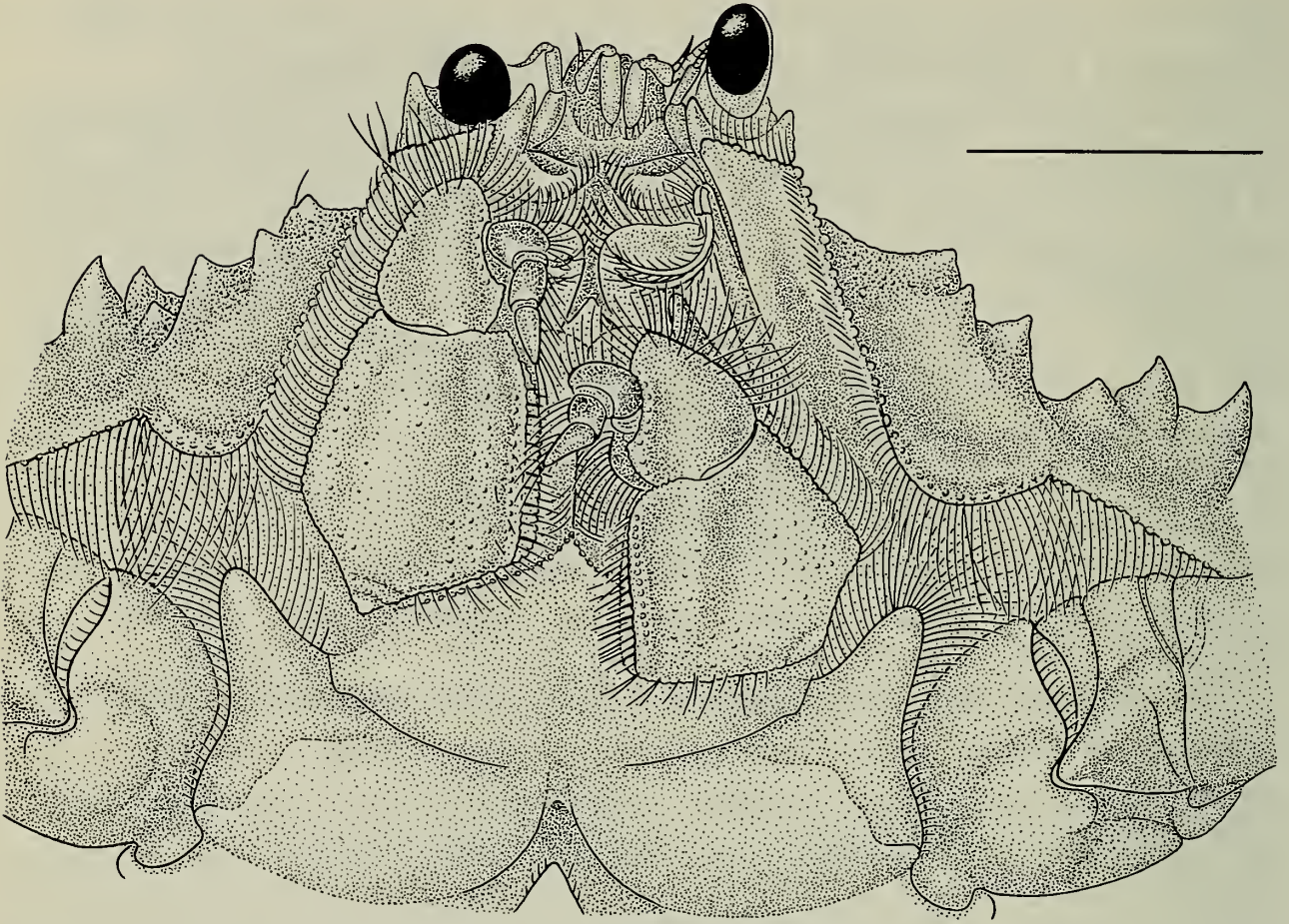


Fig. 3. *Mimilambrus wileyi*, mouth field including anterior sternites, bases of chelipeds, etc.; 5 mm indicated.

prismatic, strong ridge above insertion of short subcylindrical propodus; dactyl asymmetrically conical; propodocarpal articulation in line with that of ischiomerar articulation.

Epistome narrow, partly concealed by long setae on mouthparts, its rather broad, concave, ciliated median notch forming, with associated laciniae of first maxillipeds, a central efferent branchial opening.

Chelipeds much longer, stronger and spinier than remaining legs, right crusher slightly larger than left cutter; spines trending forward, tending to alternate large and small along rows, those of dorsal side ciliated and those of outer margin tending to be flattened, especially at tips; merus and propodus prismatic in cross section, latter most markedly so; merus separate from basis-ischium.

Right cheliped of holotype male: Coxa and basis each with single spine on anterior margin ventrally. Ischium with 5–6 low spines on anteroventral border, penultimate one largest, single anterior spine in line with anteromesial row of merus; irregular longitudinal row of low tubercles above it. Merus with rows of spines along angles (in order of decreasing average size), along outer (ca. 20 major + smaller intermediate spines), inner (ca. 15 major +



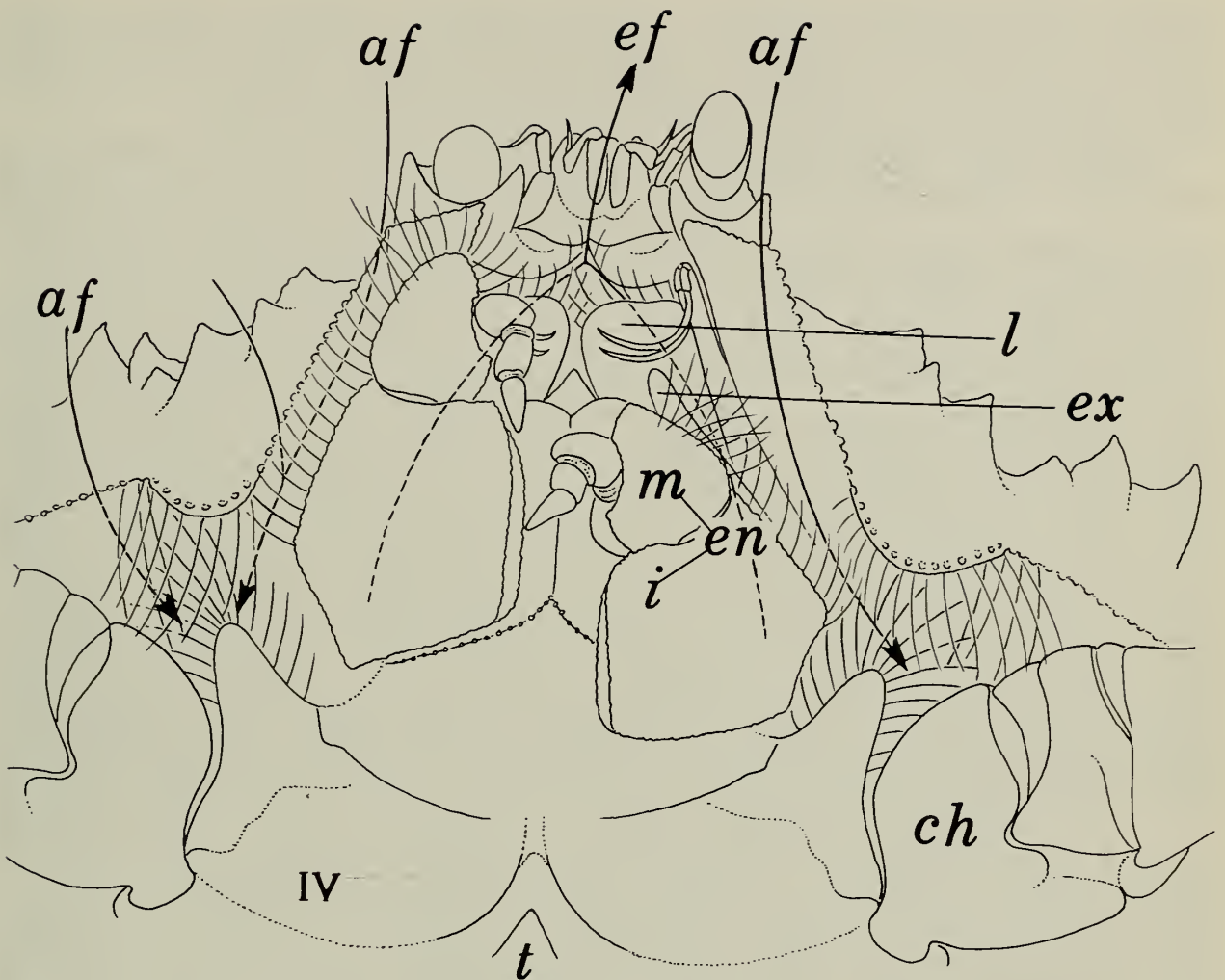


Fig. 4. *Mimilambrus wileyi*, diagram of mouth field including bases of chelipeds, etc., showing branchial channels. Third maxilliped in situ at left showing extensive filter along its lateral side and at base of cheliped; third maxilliped on right turned aside to reveal dorsal aspect of afferent channel; en, Endognath; i, Ischium; m, Merus; ex, Exognath, hidden under endognath. l, Endognath lacinia of first maxilliped. af, Afferent channels. ef, Efferent channels merged in median opening. ch, Base of cheliped. t, Telson. IV, Fourth sternite.

smaller intermediates) and mesioventral (ca. 8 + tubercles); dorsal side with row of much smaller spines (ca. 21 + smaller) along length of middle, another row of still smaller spines parallel to inner margin, and tract of scattered obsolescent spines and tubercles adjacent to outer margin; scattered tubercles elsewhere. Carpus strongly bent to fall in line with propodus; inner row of tubercles and spines ending in strong, upturned distal spine, smaller internal angle below it spinelike; 1 or 2 small, blunt spines aligned perpendicular to distal margin and lateral to inner spine; central dorsal and intercalated rows of spines diminished to tubercles; spines of external margin (12) more or less increasing in size distally but penultimate largest. Propodus (palm) with row of spines on each angle—outer (15 + smaller), inner (18), and row of small spines (ca. 27) on low dorsal ridge paralleling outer margin, its distalmost at base of dactyl; inner row of spines more

uniform than others and with 1 or more tubercles on each dorsally; longitudinal ventral keel reaching from prominent carpal condyle to tip of fixed finger almost smooth but few granules above it on inner face.

Fingers short, extended, not diverging from axis of chela, slender; tips hooked toward each other and crossing, white in color like ventral aspect of chelipeds. Dactyl broad proximally, tapering to point closing inside fixed finger; dorsal rows of spines continued from propodus; inner row with 3 short proximal spines, 1 large erect spine at  $\frac{1}{3}$  length followed by 3 small spines, strong obliquely upcurved subdistal spine, and subterminal low tubercle; lateral row with 2 unequal proximal spines, second spine matching opposite mesial spine at  $\frac{1}{3}$  length, followed by irregularly spaced tubercles and a low spine; low median dorsal ridge with 2 proximal tubercles; occlusive surface with double row of 5 somewhat remote teeth coalesced side-by-side into molariform crushers and distributed along proximal  $\frac{2}{3}$  of length, first 3 largest; distal to these a large crushing tooth with flanking anterior cusp followed by smaller pyramidal teeth near tip, proximal pyramidals flanked internally by 5 minute conical teeth. Fixed finger nearly straight but offset from ventral plane of palm; narrower than dactyl and slightly deflected, inner surface very slightly concave but outer surface evenly curved; short subdistal tooth on ventral margin preceding hooked tip; occlusive surface with shorter row of 4 unequal molariform teeth similar to those of dactyl followed by 3 remote pyramidal teeth flanked mesially by shallow slot for reception of opposed largest pyramidal tooth of dactyl; edge of dactylar socket bearing fine granules.

Left cheliped comparable to right: Number large spines on meral angles—outer, ca. 19+ smaller intercalary; inner, ca. 15+ tubercles; mesioventral, 10; dorsal side with row of much smaller spines (ca. 18+ smaller) along length of middle; another row of similar spines parallel to inner margin. Carpus essentially as on right. Spines on propodal (palmar) angles—outer, 18+; inner, 20; dorsal row paralleling outer margin, 24; longitudinal ventral keel slightly roughened with obsolescent, forward trending tubercles. Dactyl basically similar to that of right side but narrower; inner dorsal margin with 2 moderate spines and 1 small proximal, enlarged, erect spine at  $\frac{1}{3}$  length followed by 2 smaller spines; strong obliquely upcurved subdistal spine and subterminal tubercle beyond it; outer dorsal row with small proximal spine, 2 large nearly equal spines followed by remote tubercle and some granules; low median dorsal ridge with 2 obsolescent spines proximally; occlusive surface with continuous but uneven row of broad, thin shearing teeth running nearly full length of finger, flanked laterally by 6 remote reduced conical teeth in distal half of row, and internally by dense proximal tuft of silky hair, faint axial row of granules along inner surface. Fixed finger somewhat similar to that of right but with inner surface nearly straight, outer margin



inflated, finger broadest at proximal  $\frac{1}{3}$  of length; short subdistal conical tooth on ventral margin preceding hooked tip; occlusive surface spooned, row of cutting teeth running along each margin; lateral row arched dorsally in middle, bearing 8 somewhat separated triangular teeth, third to fifth from proximal end of row largest; mesial row straighter and more continuous, composed of about 12 broader irregular teeth.

Chelipeds of allotypic female: Similar to male except slightly smaller and usually somewhat fewer spines in rows; lower side of palms more sharply tuberculate; fingers more delicate and with slightly different tooth pattern. Right dactyl with inner dorsal margin proximally to distally bearing 2 moderate, 1 large, 4 small, 1 large upcurved spine(s), and a distal tubercle; outer margin bearing 2 large, 2 tiny and 1 small spine(s); middorsal ridge with 2 larger tubercles + accessories proximally; occlusive surface with double row of 5 coalesced crushing teeth, proximal 3 largest, sixth large but more strongly coalesced, seventh small, similar, small eighth and large ninth triangularly pyramidal, tenth minute. Fixed finger with subdistal ventral tooth large, acute and exceeding tip of finger; occlusive surface with double row of 5 coalesced crushing teeth but distalmost of these strongly coalesced into triangular pyramid, remote small tooth beyond it flanked mesially by linear notch and low ridge for reception of large ninth tooth of dactyl.

Left cutter with inner dorsal margin of dactyl proximally to distally bearing 1 low secondarily tipped, 2 moderate, 1 large, 3 small, and 1 large upcurved spine(s) and 1 remote tubercle; middorsal ridge with 2 sharp proximal tubercles; outer margin bearing 1 tiny, 2 large spine(s) and 1 remote tubercle; occlusive surface with 11 teeth in row tending to be doubled, 1–4 single and conical, 9 and 11 flattened in plane of finger axis and with accessory cusps on side adjacent to 10; middle of row flanked laterally by remote dorsal row of about 7 granules or tiny tubercles. Fixed finger with subdistal ventral tooth large curved and acute, exceeding tip of finger; occlusal surface spooned; bifurcate slender tooth proximally at edge of dactylar fossa in line with lateral row of 9 essentially separate, triangular cutting teeth, 5 and 8 flattened in plane of finger axis and with obsolescent accessory cusps on each slope; inner tooth row almost obsolescent, 2 or 3 triangular teeth at point of highest elevation.

Walking legs much smaller than chelipeds, shorter than meri of latter; first 2 walking legs of about equal length, third and fourth progressively longer; fourth longest and strongest; meri with row of spines on upper and lower crests; other surfaces of articles smooth; merus of first walking leg shorter than carpus and propodus combined, of last about equal to carpus and propodus combined; dactyls slender, gently curved, tapering to acute corneous tip, slightly flattened, longitudinally ribbed and grooved.

Male abdomen with 2 proximal, broad, free segments visible in dorsal

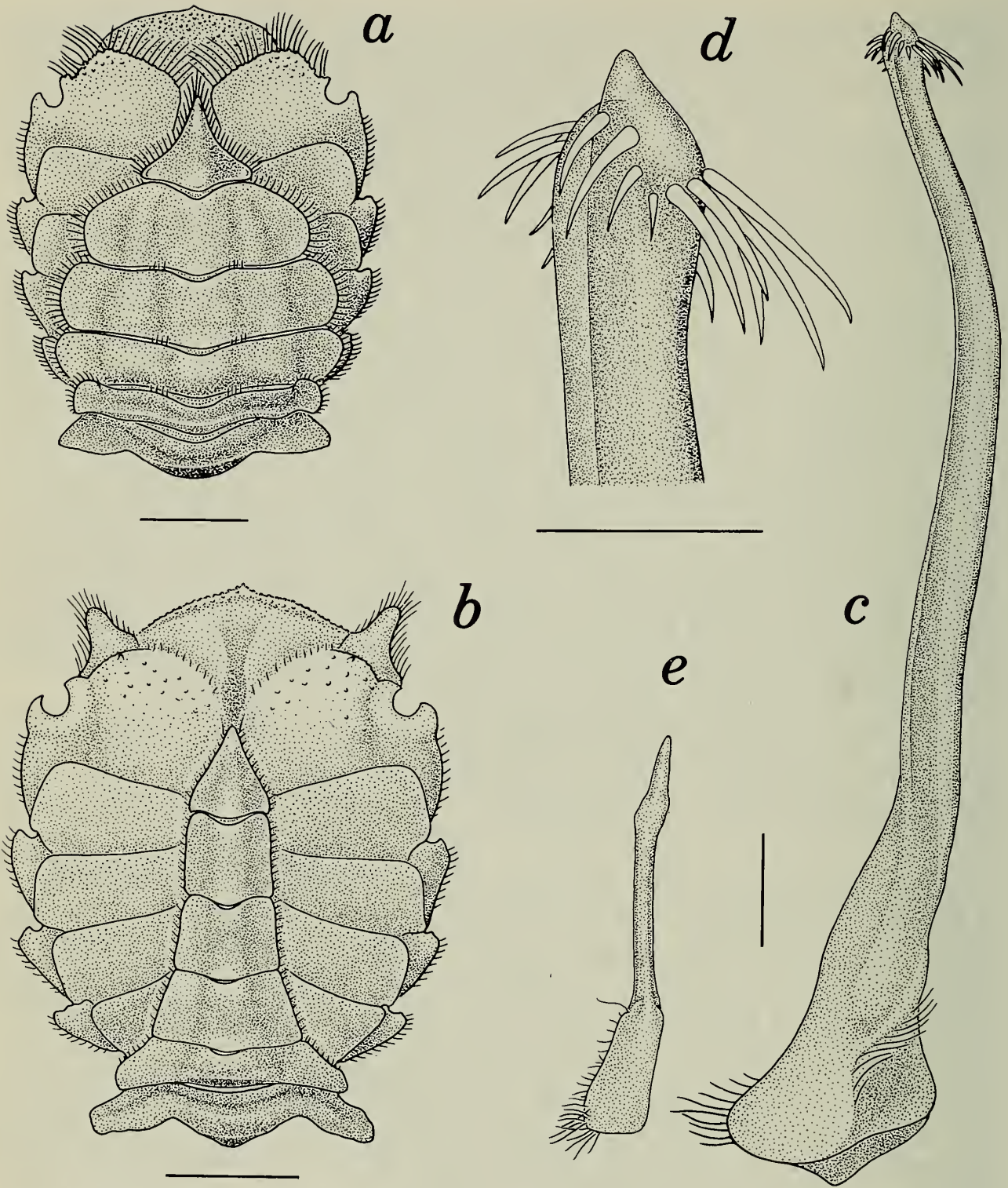


Fig. 5. *Mimilambrus wileyi*. Abdomen and sternites in ventral view; a, Female; b, Holotype male; 5 mm indicated. Gonopods of holotype male in ventral view; c, First; e, Second; 1 mm indicated; d, Tip of first; 0.5 mm indicated.

view; ventrally visible part tapering from broad second segment to narrow, subtriangular telson with sinuous sides, its constricted tip reaching nearly to level at which first legs articulate with sternum; abdominal margins densely ciliated. Short first segment slightly arched, filling space between fifth coxae, its somewhat concave dorsal surface molded to posterior marginal



contour of carapace but flared laterally to meet basal articles of fifth legs, posterior margin raised into rounded ridge. Second segment drawn into prominent, thin, 3-lobed flange or stop directed posteriorly, broader than first segment and overlapping basis of fifth legs at each side; median lobe narrowly rounded in outline, lateral lobes irregular; dorsal surface concave, smooth, ventral surface similar but with narrower transverse concavity limited to central half. Third segment as broad proximally as first, roughly trapezoidal in outline, its sides narrowing abruptly from rounded proximolateral corners to articulation with fourth segment; transverse median ridge broadly confluent with proximolateral corners, but with narrowed central section flanked by transverse concavity anteriorly and posteriorly. Fourth, fifth and sixth segments subquadrate, progressively narrowed toward telson. Third to fifth segments articulated but not completely mobile.

Female abdomen (mature) nearly as broad as sternum, composed of 6 free segments (first 2 visible in dorsal view, remainder, including second, visible ventrally); much narrower, subtriangular or hastate telson broader than long, sides concave, proximal margin biconcave, angles rounded but tip most narrowly so, and reaching level of articulation of first legs with sternum; abdominal margins densely ciliated. First segment narrowest and very short, slightly arched, filling space between bases of fifth legs, its somewhat concave dorsal surface molded to posterior marginal contour of carapace but flared laterally to meet basal articles of fifth legs, posterior margin raised into low rounded ridge. Second segment prominent, 3-lobed thin flange or stop directed posteriorly, broader than first segment and overlapping basis of fifth legs at each side, median lobe broadly rounded in outline, lateral lobes irregular; dorsal surface concave, smooth, ventral surface similar but with narrower concavity limited to central half. Third to sixth segments broadly subrectangular, lateral margins of each rounded, broad posterior median notch in each filled by articular membrane or anterior median projection of third to fifth; fourth segment broadest; sixth longest, its posterolateral margins sloping. Segments 2–5 bearing well developed, biramous pleopods. Circular female openings with crescentic aperture mesially on sixth sternite.

Male openings coxal. First pleopods, viewed ventrally, long and slender, reaching to suture between sternites IV and V; relatively stout, narrowly triangular proximal  $\frac{1}{3}$  narrowing at slight inflection into longer more slender central  $\frac{1}{3}$ , elements of each side nearly touching in midline at suture between sternites VI and VII, then gently diverging in distal  $\frac{1}{3}$ ; tip slightly dilated, bluntly pointed and bifid, conspicuously ringed by circlet of subapical, retroflexed spinules, longest mesially.

*Measurements in mm.*—Holotype male (H), allotype female (A), and paratype male (P).

	Length carapace	Width carapace	Depth thorax	Anterior edge merus, ischiomeral suture- merocarpal condyle		External edge carpus-base of dactyl		Length dactyl	
H	24.3	26.0*	13.0	R	41.5	R	49.9	R	11.5
		28.4†		L	41.5	L	47.9	L	10.9
A	24.4	24.8*	13.1	R	34.1	R	43.4	R	8.7
		28.2†		L	34.1	L	42.0	L	8.3
P	25.8	27.5*	14.0	R	42.0	R	50.1	R	13.0
		30.4†		L	41.5	L	48.0	L	12.7

\* Excluding spines; † including spines; R right; L left.

*Color*.—Paratype male in alcohol 9 March 1979. Carapace grayish on gastric and cardiac regions, becoming darker along rows of spines radiating over branchial regions; lighter, flesh colored band around perimeter, broadest adjacent to anterolateral, orbital and frontal areas, and in area surrounding cardiac region; spines and tubercles similar except for gray of branchial ridge continued on lateral spine. Entire dorsal aspect of carapace and limbs very finely speckled with rust-red; speckles arranged in reticulate pattern on chelipeds; elongate spots of same color along inner surface of each fixed finger except for base and tip; each dactyl with narrower, shorter spot of same color on inner surface, smaller spots at base of penultimate, upturned spine and scattered along dorsal aspect.

*Material*.—USNM 172222, holotype ♂, USNM 172223, allotype ♀, Tobago, West Indies, Man-of-War Bay, gill net over sand at night, depth ca. 10 ft., 14 April 1978. Collected by M. L. Wiley, F. D. Martin *et al*.

USNM 172264, paratype ♂, Tobago, Charlottesville, found dead on beach, 16 December 1978. Collected by A. L. Braswell. Transfer from North Carolina State Museum of Natural History.

*Remarks*.—*Mimilambrus wileyi* has a striking but only superficial resemblance to crabs of the subfamily Parthenopinae. Spination of the chelipeds is different, the fingers are extended in the longitudinal axis of the hand rather than set at a mesial angle to the palm, although the fixed finger is slightly offset from the ventral margin of the palm, and double rows of teeth on occlusal edges of the fingers are unlike any tooth rows recorded for the parthenopids. The walking legs are much smaller than the chelipeds, as in the Parthenopinae, but the last walking legs are longer than the first and shaped much as in *Acanthocarpus alexandri* Stimpson (Calappidae) whose meri are smooth rather than spined on upper and lower margins.

The carapace is rounded in outline, roughly octagonal rather than trigonal or pentagonal as in many Parthenopinae, but the front bears a short, pointed rostrum (as in some *Parthenope*, also *Heterocrypta* and *Mesorhoea*) and there is a longitudinal, raised middorsal tract extending from the gastric region to the posterior border that bears a few spines. To each side of this



tract are raised, roughly concentric tracts bearing more or less developed rows of spines that remotely resemble the faint branchial surface sculpture in *Cycloes* (also *Mursia*) (Calappidae), but the forward trend of both these spines and the strongly acuminate, suberect lateral spines, along with the number and arrangement of anterolateral spines, reduces similarity to *Cycloes* or the parthenopids. The frontal region, deeply cut for the antennular sockets and provided with roomy orbits housing well developed retractile eyes, suggests calappid affinities.

The uniqueness of the present species becomes most apparent in ventral aspect. The mouthparts which extend forward within a truncately triangular mouth field are immediately reminiscent of the oxystomes as recognized by Rathbun (1937) but modified by Guinot (1966, 1967) to exclude certain groups (Aethrinae Dana 1852; Hepatinae Stimpson 1871) which she allied more closely to the Parthenopidae. The mouthparts of *M. wileyi* seem similar to those of the Leucosiidae (Guinot 1966:761, figs. 23–24) but the resemblance is a superficial one. The similarities are: 1) truncately triangular mouth field; 2) afferent respiratory channels along sides of mouth field with incurrent openings at base of orbito-antennal area; 3) efferent respiratory channels emptying through a common anterior median opening situated between incurrent openings at either side. The differences are: 1) The third maxillipeds do not close tightly together in the midline, but are slightly gaping. 2) The good-sized palp of each third maxilliped (carpus, propodus, dactyl), articulates near the anterointernal angle of the merus in a manner faintly similar to that in the Parthenopidae, and is exposed as in that group, not concealed under the merus as in the Leucosiidae; the roughly triangular merus is excavated and longitudinally grooved mesially for reception of the exposed palp. 3) The exognath of the third maxilliped is completely concealed beneath the broad ischium and merus of the endognath and bears a palp, not exposed and palpless, covering the efferent branchial channel as in the Leucosiidae. 4) The basis of the third maxilliped is exposed, but the coxa is almost hidden. 5) Although the afferent branchial channels open anteriorly, lateral to the endognath of each third maxilliped, each is in fact open along the entire lateral side of its ischium and merus as well as in front of the base of each cheliped but covered along this length by a dense filter of overlapping setae fringing the channel margins; the shallow channels are smooth dorsally, each sealed along its mesial side by the concealed exognath of the third maxillipeds and to some extent by exognaths of the second and first maxillipeds. 6) The endognath lacinia of maxilliped 1 is broad and truncate distally, forming, with its member of the opposite side, a deflector for water discharging from the efferent channels through an undivided median notch in the epistome. In short, although the external respiratory organization is roughly analogous to that in the Leucosiidae, it is less rigidly confined, has different mesial and ventral boundaries, and seemingly has a

much more extensive afferent filtration area. But concealment of the exognath of the third maxilliped may also be an extension of the trend seen in *Mesorhoea* (Parthenopinae) in which that element is visible lateral to but partly tucked under the endognath.

The orbits of *M. wileyi* are more open than those of either the parthenopids or leucosiids. The orbital hiatus of leucosiids is rather tightly filled by a small, slender antennal peduncle; in *M. wileyi* this peduncle is relatively larger and more loosely fitted. The orbital hiatus of parthenopids is filled by both the enlarged basal antennular article and restricted, tiny antennal peduncle. Although both of these peduncles fold obliquely in all of the forms discussed above, those of *M. wileyi* are almost vertical.

The flattened body, plane, broad, longitudinally elliptical sternum, male abdomen with 3 rather broad proximal and narrowed distal segments, and the fully segmented but rather loosely apronlike mature female abdomen which covers much of the sternum all bear remote resemblance to those features of the Portunidae. The resemblance, however, is tenuous. Segments of the mature female *Parthenope* abdomen are broad and articulated, but the telson is broad and rounded rather than rather narrow and hastate as in *M. wileyi*; that of some transitional parthenopid genera discussed below is narrower with pointed telson, but tightly fitted to the sternum. Shape of the mature female majid abdomen, while not uniform, tends toward the form of a subcircular purselike receptacle tightly closed against the sternum; there is complete articulation between segments in some species, but tendency to emphasized distal segments in many others with either broadening of the rounded telson or suppression of it when the sixth segment is greatly enlarged in a manner paralleling that seen in leucosiids. The male abdomen of *M. wileyi* is almost completely articulated in segments 3–5, somewhat as in *Parthenope*, whereas these segments are fused in portunids, calappids and leucosiids. The posterior sternites are wider and larger in Portunidae, but narrower in other groups discussed above, than in *M. wileyi*. Other similarities in the sterno-abdominal features of these groups seem too remote to be of consequence.

The male pleopods seem unique, unlike those known among other brachyurans.

Guinot (1966), and carcinologists up until around 1900 whose work she reviewed, regarded certain genera as transitional between the sections Oxystomata and Oxyrhyncha. Attention was directed (paraphrasing Guinot) to a common narrowness of frontal region and concentration of sensory organs but a differing conformation of buccal cavity and respiratory arrangement, particularly the position of efferent branchial canals. Most of this attention focused on genera (*Cryptopodia*, *Solenolambrus*, and especially *Mesorhoea*) which somewhat resemble the Oxystomata in arrangement of the buccal area and, rarely (*Aethra*), in position of chelipeds, but not in position



of antennular and antennal peduncles. Rathbun (1925, 1937) accepted the ideas of Alcock and included these genera in the Parthenopidae (Guinot 1966), as did Garth (1958).

Guinot (1967) then extended the transitional status to genera of Oxystomes which could be considered as transitional between these two groups (*Aethra* [again], *Osachila*, *Actaeomorpha*, *Hepatella* and *Hepatus*). She set up another set of comparisons among these intermediate crabs. Those with either oxystomous or brachygnathous buccal frame were considered parthenopid in appearance if antennules and antennae fold longitudinally or slightly obliquely, male abdominal segments are distinct, sternum is narrowed posteriorly, basis-ischium of cheliped is separate from merus, and exognathal flagellum of the third maxilliped is present. Those with oxystomous buccal frame were not considered parthenopid in appearance if antennules and antennae are strongly folded obliquely, male abdominal segments 3–5 are fused, sternum is broadened posteriorly, basis-ischium of chelipeds is fused with merus, and exognathal flagellum of the third maxilliped is reduced or absent. After some collateral comparisons, Guinot provisionally proposed uniting the genera *Aethra*, *Osachila*, *Hepatus*, *Hepatella* and *Actaeomorpha* in the same taxonomic unit, the Aethrinae Dana 1852 which she resurrected and placed in the Parthenopidae near genera such as *Cryptopodia*. Sakai (1976) adopted this placement.

From another point of view, Glaessner (1960:46) considered the parthenopids with their pointed rostrum, prominent mesogastric-cardiac ridge and elongate [broadened?] cephalothorax to be much closer to the Oxystomata than to the Brachyrrhyncha, although in his view their mouthparts are much more advanced [mostly brachygnathous]. According to Glaessner (1969) the Oxystomata first appear in the Lower Cretaceous, but details of their subdivision are obscure. The Leucosiidae, probably derived from the Calappidae, do not appear until the Cenozoic. Glaessner regarded origin of the Oxyrrhyncha also as obscure, for at their first appearance in the Eocene the families Majidae and Parthenopidae are well differentiated. The Oxystomata have been suggested as their ancestors.

*Mimilambrus wileyi* occupies a position intermediate among these families. Which of its characters represent convergent specializations and which are fundamentally transitional is unknown. It is perhaps more parthenopid than calappoid.

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